

# Airline Operations Center Simulation Lab

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# ERAU Airline Operations Center Lab

## Daytona Beach Campus



# “Built it and they will come.”

- Provide a unique “capstone experience” for our students.
- Expand current Aircraft Dispatcher Certificate offerings.
- Potential research- Airline and possibility UAS operations.

- Used a lab at MTSU as the concept.
- Worked with Dave Bushy, formerly of Delta and Jet Blue.
- Visited centers at different companies.
- Designed the space, required closing in a balcony on the building.
- Selected software and equipment.
- Developed roles and scripts- ongoing effort.

# Why?

- To provide Aeronautical Science (Professional Pilot) students the exposure to the “other side of the microphone” part of the airline career. A better understanding promotes better teamwork.
- Primarily used in our capstone courses for the AS and Aeronautics degrees.

- From this-



- To this-



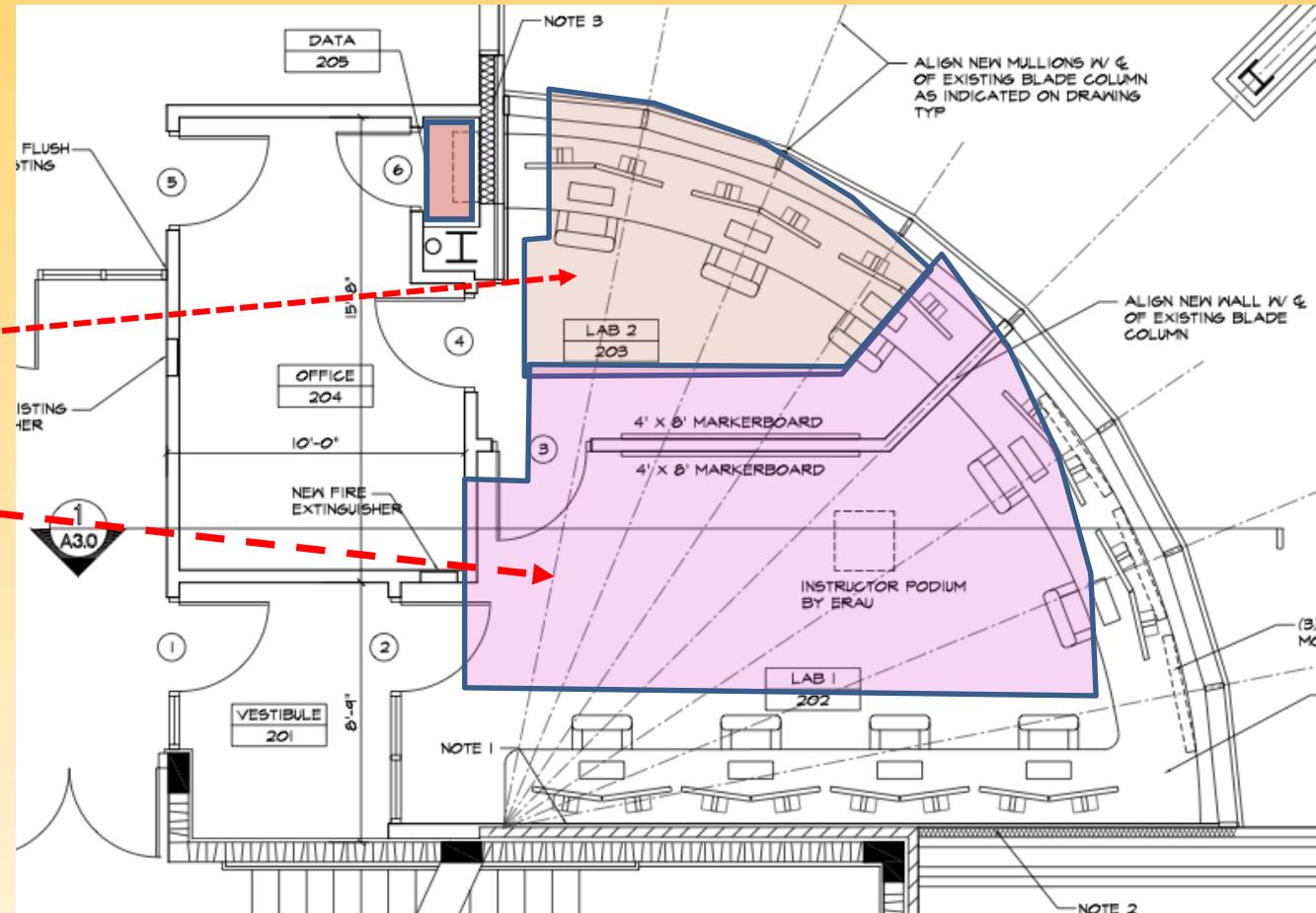
Aeronautical Science, Daytona Beach, FL

The lab is divided into two spaces:

The Role Player Area

The Operations Center

There is also a dedicated server closet for the lab server and networking.



# Overview of Lab- “The Ops Part”

This is the learning part of the lab

- ATC/Weather
- Dispatch
- Operations
- Crew Scheduling
- Maintenance
- Load Control



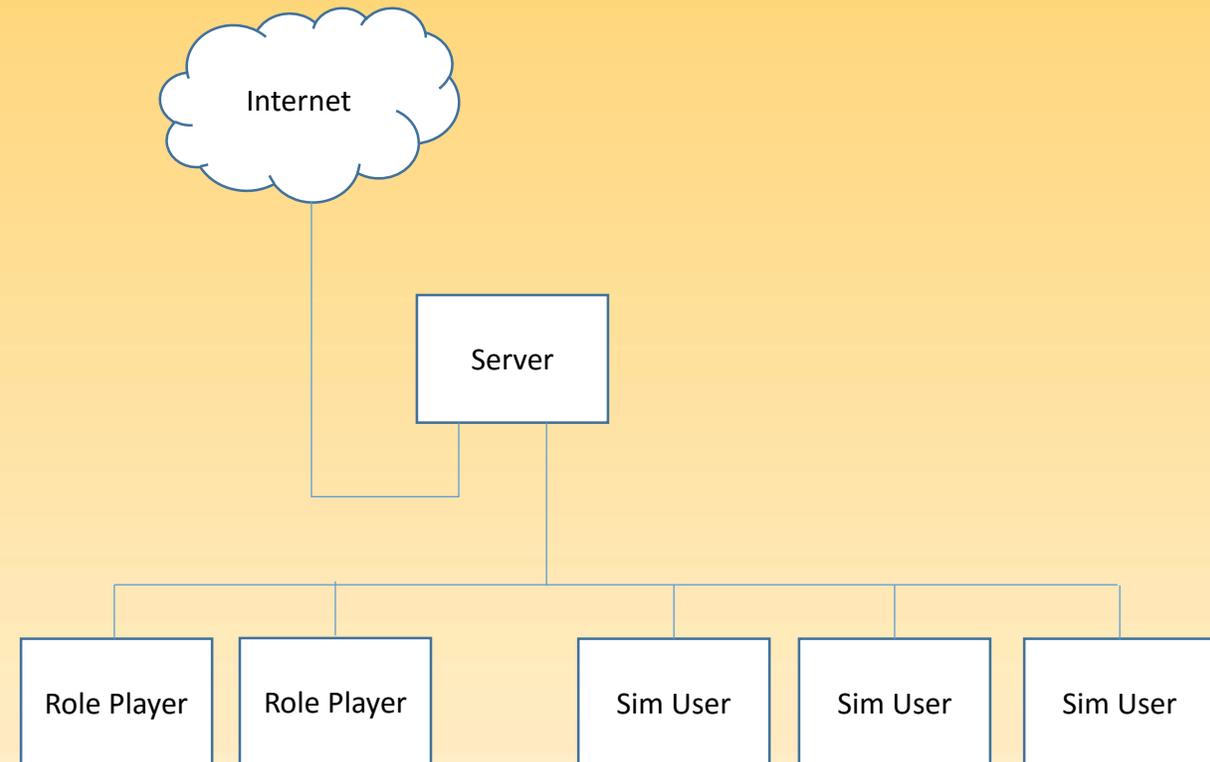
# Overview of Lab- “The Back End”

- Role Players
- Scripted Scenarios



The network layout is a single LAN segment, with a Windows server providing a local domain and application services.

The server also acts as a router, providing packet forwarding to the Internet.



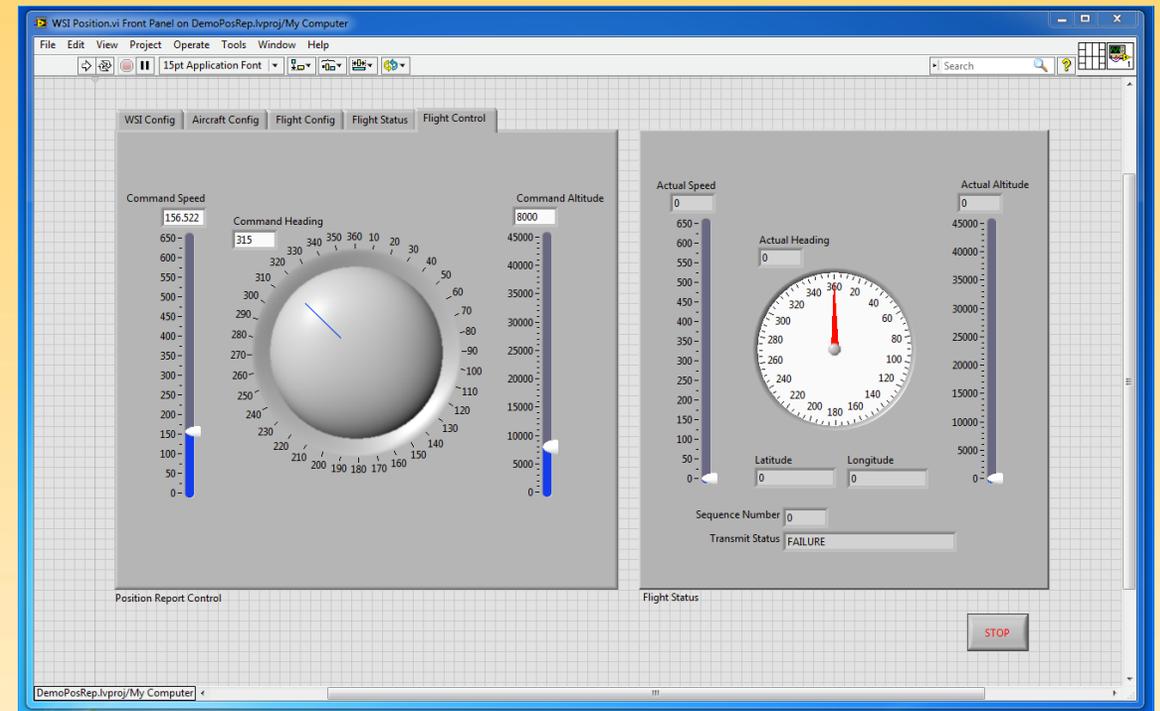
# Telephone

The AOC Lab uses standard University phones for audio connections.

The role player stations have multi-line phones that permit them to portray multiple roles in the simulation environment, based on the number they answer. The phones have the usual external connectivity to allow other facilities to coordinate with the AOC Lab.

- WSI Fusion Client – provides the map view of the aircraft and weather.
- AeroWeb – provides the aircraft flight schedule (GANTT Chart.)
- TeamSpeak – provides audio and text communications.
- LabVIEW – provides the environment that runs the custom ‘sim aircraft’ app.
- NavTech (online service) – flight planning and dispatch release.
- IGo Dispatch – for aircraft weight and balance.
- Microsoft Excel (online service) – for maintenance/customer service/crew schedule support.
  
- AeroWeb and TeamSpeak also have server code that runs on the AOC Lab server.

The AOC Lab uses a custom LabVIEW application to generate virtual traffic that can be controlled by role players. The virtual traffic is combined with Aircraft Situation Display to Industry (ASDI) data and presented to the AOC Lab by WSI Fusion.



# Stations



ATC/Weather & Dispatcher



Operations and Load Control  
To the right of these are Crew and Maintenance



Role Player

# Scenarios

Operational scenarios are described in a Timeline document called the Master Event List (MEL).

Roleplayer actions are described along with the expected responses from the students in the scenario.

The MEL is used to generate briefing materials for the roleplayers so they initiate the right events and can respond correctly to queries from the students as they work through the scenario.

00:20	In Range Call	Role Player 1 (Flight Crew)		Calls In-Range Call (Teamspeak Aircraft Comms) to Dispatch	Radio--Teamspeak	
00:20	In Range Call		Dispatch	Responding to In-Range Call with "plan for gate number B-29."	Radio--Teamspeak	
00:20	In Range Call		Operations	Notifying <b>all AOC positions</b> that aircraft is in-range	Face-to-Face Discussion	
00:21	Preparing for AOG		ATC Liaison	Reviewing last minute changes to airspace system for arrival and inform operations	Face-to-Face Discussion	
00:21	Preparing for AOG		Dispatch	Continuing flight planning for departure flight. Awaiting final information from Load Control and Maintenance. Monitoring other positions for relevant information and question as required.	NavTech	
00:21	Preparing for AOG		Operations	Checking outbound flight schedule for arriving aircraft, gate availability. Calling Gate Agent inform of imminent passenger deplaning. Monitor other positions	Phone and Aeroweb	
00:21	Preparing for AOG	Role Player 2 (Gate Agent)		Calls Operations to inform standing-by for passenger deplaning	Phone	
00:21	Preparing for AOG		Load Control	Calling KPIT Baggage in order to notify that aircraft in range for offload at gate "B-29"	Phone	
00:21	Preparing for AOG	Role Player 3 (Baggage)		Stands-by for baggage offload	Phone	
00:21	Preparing for AOG		Crew Services	Informing dispatcher of flight crew names for dispatch release	Crew Pairings AOC Schedule v6-4-15	Tail Number N801ER
00:21	Preparing for AOG		Maintenance	Calling KPIT Line Maintenance that aircraft is in range and standby gate "B-29" for aircraft marshalling	Phone	

# Scenarios

- An example scenario involves a flight landing and being turned around for its next scheduled leg. Students handle the aircraft and crew in real time from “in range” to off the runway on the new flight.
- Roleplayers provide the virtual world for the AOC by acting as flight crews, gate agents, Maintenance staff and any other people the AOC needs to interact with via voice over the phone or ex when appropriate.
- The instructor and lab assistants provide in-context information to the roleplayers when information is needed that is not in the scenario brief.

- In the short run we are developing the lab to be an add-on to existing airline pilot centric courses to give them an appreciation of the behind the scenes events triggered by decisions and events in the cockpit.
  - This type of course has time limitations and different objectives than a minor course of study.
  - In this type of course the learning objectives are more conceptual in nature and designed to make the students a better airline captain and make better decisions.
  - The limited time and overview nature of this type of course does not lend itself to students learning the intricacies of a particular piece of software. Here-to-for we have been building this course around a group of Excel documents and scenarios developed by our faculty to teach the interconnectivity of the various departments in an airline.

- In the long term, we are heading toward a full-fledged airline operations minor or degree.
  - Can tailor more courses to the needs of the industry.
  - Students in this program will benefit greatly from working with a comprehensive piece of software similar to what is used in industry.
  - More time would be available to set up and learn the software.
  - More time to develop necessary skills, such as collaborative decision-making.